## III. REMARKS

A claim for small entity status is enclosed.

The word "uniformly" and phrase "of a non-growth constituted gas" have been deleted. The later has been replaced by "in the chamber", which is supported by p. 13, ll.29 and 30. Thus it is submitted that claims 1-11 comply with 35 USC 112, first paragraph.

As the Examiner correctly states Bernardi and Hsieh do not teach varying pressure to vary the degree of supersaturation and hence the growth rate.

Applicants maintain that the teaching of Dugger, concerning varying the degree of supersaturation for single crystal growth by changing the pressure of the solution, is neither sufficient nor renders claim 1 obvious in view of the teaching of Bernardi, which is only concerned with the growth of HgCdTe epitaxial layers. The passing comment by Dugger merely alludes to the fact that the degree of supersaturation of a solution may be affected by a number of standard thermodynamic parameters. This is not the same as teaching a method of crystal growth from solution by varying the pressure. Furthermore, Dugger, and other contemporary documents, are concerned with the growth of bulk crystals, and not epitaxial layers. In particular, the method disclosed by Dugger is for the *three-dimensional* growth of bulk single crystals, which is very different from our method of *two-dimensional* thin film epitaxial growth on top of a substrate. For thin film epitaxial growth, material composition control of the film in terms of lattice matching to the substrate is very

important to obtain good quality films. The requirements and tolerances on control parameters for bulk growth are different than for epitaxial growth. Thus Dugger cannot be combined with Bernardi.

Liao merely states that supersaturation can be obtained by applying pressure. There is no disclosure of varying the pressure to change the degree of supersaturation. In particular, Liao discloses a method of preparing a composite solid particle, whereby particles are attached or stick onto a surface of a solid particle as a core. Subsequently, crystals of fine particle component are allowed to grow on corefine particle combination with attached fine particles acting as crystal nuclei (in this manner, fine particles are firmly fixed onto core particles). Various crystal growth methods are quoted, and "in the liquid-phase growing method, a crystal is allowed to grow from a solution obtained by dissolving fine particle material in solvent in supersaturated state", obtained by "cooling a solution, evaporating a solvent, or applying a pressure to a solution, or such reactions as solid-liquid, liquid-liquid or vapor liquid reaction" [para 0026]. However, it should be noted that the Liao crystal growth method here is not about epitaxial thin film growth over a planar substrate. In addition, the fine particles in Liao's method refer to "hydroxides halides, carbonates, sulphates, nitrates, phosphates, hydrogenphosphates and silicates of various metals" [para 0020], and these materials are not semiconductors. Liao's fine particles acting as crystal nuclei in subsequent crystal growth are in a powder form, not crystalline and are attached to the core particle without any crystalline order.

Consequently, this prior art cannot be considered to be of any relevance to the present invention, and cannot be combined with Bernardi or Hsieh.

If it were "apparent" to a person of ordinary skill to apply pressure control to the growth of an epitaxial layer from a supersaturated solution, one might have expected to see some specific teaching or application in the 25 years or so since Dugger's disclosure. Rather, the industry has tended towards other techniques including the well-developed temperature controlled growth technique, as exemplified by several of the cited documents including Dugger. The Examiner is therefore employing an unjustifiable degree of hindsight in combining certain facts concerning the supersaturation of solutions with known techniques for the growth of epitaxial layers.

As regards the Examiner's comments (point 10, p. 11, third paragraph) concerning an apparent lack of limitation in claim 1 to "thin films" (as opposed to bulk crystal), epitaxial layers are, by their very nature, thin layers of single crystal material. Therefore, as the claim is directed to "A method of growing semiconductor epitaxial layers…", further exposition or limitation is not required.

Thus neither the improper combination of Bernardi and Dugger nor Hsieh and Dugger (with or without Liao) results in the invention of claim 1.

Similarly none of the remaining references disclose the varying pressure concept. In particular, Gault does not teach varying pressure to induce crystal growth, while Omino relates to bulk crystal growth, and pressure is used to prevent evaporation of

source materials from the compound and not to control supersaturation (col. 1, 11.40-50).

For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record, and are in proper form for allowance. Accordingly, favorable reconsideration and allowance is respectfully requested. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

A check in the amount of $55 is enclosed for a one month extension of time and additional claim fees. The Commissioner is hereby authorized to charge payment for any fees associated with this communication or credit any over payment to Deposit Account No. 16-1350.

Respectfully submitted,

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